

## 1. Introduction

A client has come to me with seed money to open a piazza shop in the Town of Oyster Bay. The Town of Oyster Bay consists of 20 Cities in Eastern Nassau County, Long Island, NY. The goal is to pick a city, where client can open a pizza shop with the least amount of pizza shops per city population.

## 2. Data

- foursquare – to obtain the number of pizza shops in a city, including latitude and longitude.
- <https://oysterbaytown.com/> - list of all cities within Oyster Bay.
- [https://www.newyork-demographics.com/cities\\_by\\_population](https://www.newyork-demographics.com/cities_by_population) - 2021 population estimates by city

### 2.2 Data Implementation

- Get count of pizza shops in each city.
- Get population for each city
- Residents Per shop = (Number of Pizza Shops/Population)

## 3. Data Methodology

- load csv file of population estimates for each city in New York in a dataframe

	City	Population
0	New York City	8230290
1	Buffalo	254290
2	Rochester	205077
3	Yonkers	201344
4	Syracuse	141491

- load csv file of cities in Oyster Bay and get city latitude and longitude for each city.

	City	CityLat	CityLng
0	Amityville	40.678939	-73.417067
1	Bayville	40.910654	-73.562069
2	Brookville	40.813155	-73.567348
3	Centre Island	40.901765	-73.519845
4	Cove Neck	40.882321	-73.505956
5	Farmingdale	40.735674	-73.441752
6	Lattingtown	40.895377	-73.600960
7	Laurel Hollow	40.856765	-73.469566
8	Massapequa Park	40.680379	-73.455124
9	Matinecock	40.861791	-73.579806
10	Mill Neck	40.887043	-73.555125
11	Muttontown	40.823938	-73.547625
12	Old Brookville	40.832044	-73.604849
13	Old Westbury	40.788711	-73.599572
14	Oyster Bay Cove	40.870932	-73.510957
15	Roslyn Harbor	40.816439	-73.637073
16	Sea Cliff	40.849156	-73.644843
17	Upper Brookville	40.838710	-73.565126
18	Westbury	40.755656	-73.587627
19	Bethpage	40.743231	-73.483814

- Loop through each city to get pizza shops utilizing the foursquare API and merge all datasets.

	Name	Categories	Lat	Lng	City	Population	CityLat	CityLng	PerCity	Residents_per_shop
118	Frank's Pizza	Pizza Place	40.712825	-73.461282	North Massapequa	18505	40.700416	-73.462606	2	9252.5
119	Crostini Pizza	Pizza Place	40.702538	-73.462314	North Massapequa	18505	40.700416	-73.462606	2	9252.5

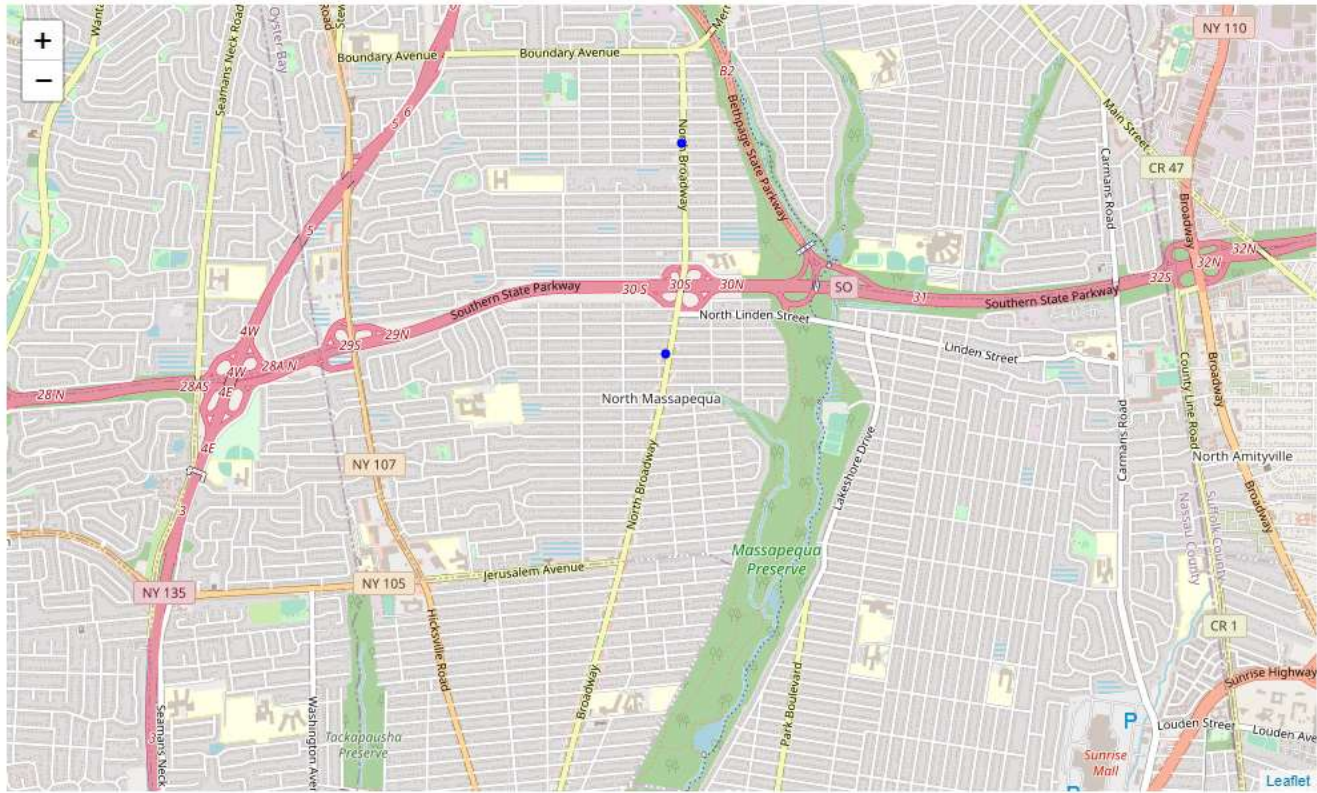
- Create new dataframe group by city, residents\_per\_shop and number of pizza shops. (See dataframe under results)

#### 4. Results

Based on findings, North Massapequa had the lest amount of pizza shops for their population. North Massapequa has a population of 18,505 with only 2 pizza shops serving their city.

	index	City	Residents_per_shop	Number of Pizza Shops
0	18	North Massapequa	9252.500000	2
1	4	South Farmingdale	7614.500000	2
2	14	Jericho	6944.500000	2
3	6	Bayville	6712.000000	1
4	12	Glen Head	5053.000000	1
5	19	Sea Cliff	5002.000000	1
6	8	Syosset	4863.250000	4
7	2	Massapequa Park	3412.200000	5
8	10	East Norwich	2959.000000	1
9	9	Oyster Bay	2918.000000	2
10	11	Woodbury	2827.750000	4
11	15	Plainview	2404.818182	11
12	17	Bethpage	2203.375000	8
13	3	Seaford	2148.571429	7
14	13	Hicksville	2033.761905	21
15	1	Massapequa	1675.692308	13
16	16	Westbury	1535.500000	10
17	0	Amityville	1035.666667	9
18	7	Locust Valley	870.250000	4
19	5	Farmingdale	690.615385	13

Map of North Massapequa. Blue Markers indicate location of pizza shops.



## 5. Discussions

I wanted to include ratings and menu price costs. However, I encountered the following limitations from foursquare API, where I scrapped both variables out of my analysis. Developer addition only allows only 50 premium calls a day, and I was analyzing over 400 pizza shops. In addition, average menu price and ratings were missing from about 60% of the pizza shops. As a results, I just focused on population and number of pizza shops in the city.

## 6. Conclusion

This project narrows down North Massapequa as possible location to open a pizza shop. Additional data analysis would be needed, such as ratings, menu variety and average menu cost of the two other pizza shops in Massapequa.